

APPENDIX L

(R)

DISPOSAL OF SHIPBOARD HAZARDOUS MATERIAL

The HM listed in appendix L are representative of materials used during conduct of normal shipboard operations and in performance of planned maintenance and general housekeeping procedures. If disposal guidance is sought for a material not listed in this appendix, contact your ship's HM coordinator.

Shipboard Hazardous Material Type	Examples of Generation Sources	Examples of Associated Hazardous Materials	Authorized Disposal Methods
Acid, spent	Cleaning.	Acetic, citric, hydrochloric, sulfuric, and sulfamic acids.	Carefully neutralize with a weak base, dilute and flush overboard beyond 12 nm of shore using large amounts of water; within 12 nm containerize for shore disposal. See NSTM chapter 593, Pollution Control for spent acid disposal procedures.
Aerosol cans	Empty paint, lubricant deodorant, and shaving cream cans.	Flammable products, flammable propellants (propane, butane), oxidizer (nitrous oxide).	<p>If the ship is equipped with a NAVSEASYS COM-approved aerosol puncturing/draining device, puncture and drain the exhausted aerosol container. The container shall be marked "empty" and treated as an empty HM container.</p> <p>If the ship is <u>not</u> equipped with a NAVSEASYS COM-approved aerosol puncturing/draining device, containerize for shore disposal.</p>
Alkali, spent	Cleaning, deoxidizing.	Sodium hydroxide, potassium hydroxide.	Carefully neutralize with a weak acid, dilute and flush overboard beyond 12 nm of shore using large amounts of water; within 12 nm containerize for shore disposal. See NSTM chapter 593, Pollution Control for spent alkali disposal procedures.
Asbestos containing materials <i>(to be removed by properly trained personnel equipped with appropriate personal protective equipment only.)</i>	Thermal insulation, pipe lagging, flooring tile, safety curtains, gasket and packing materials.	Asbestos.	Dispose in accordance with requirements set forth in OPNAVINST 5100.19C, chapter B1.

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Shipboard Hazardous Material Type	Examples of Generation Sources	Examples of Associated Hazardous Materials	Authorized Disposal Methods
Batteries			
Lead-acid batteries	Propulsion systems auxiliary lighting, communication and power systems.	Lead, lead sulfate, lead dioxide, antimony, sulfuric acid electrolyte.	Containerize for shore disposal. Do not empty electrolyte from battery.
Alkaline batteries: Nickel-cadmium Silver-zinc Nickel-iron Silver-cadmium Nickel-zinc	Auxiliary power systems, power supply for portable equipment.	Nickel, silver, zinc, cadmium, potassium hydroxide electrolyte.	Containerize for shore disposal. Do not empty electrolyte from battery.
Dry cell batteries: Lelanche cells Mercury cells Low-temperature cells	Power supply for portable equipment.	Manganese dioxide, mercuric oxide, zinc.	Containerize for shore disposal.
Lithium batteries	Power supply for portable equipment.	Lithium, acetonitrile.	Containerize for shore disposal.
Biocide, VANTOCIL IB[®]	Water from MK41 vertical launch deluge system.	Polyhexamethalene biguanide hydrochloride, sodium hypochlorite.	Overboard discharge permitted beyond 25 nm of shore. In port, containerize for shore disposal.
Boiler wastewater	Boiler blowdown, boiler water, continuous boiler water treatment tank.	Trisodium and disodium phosphate, hydrazine, ethylenediamine-tetraacetic acid (EDTA).	Overboard discharge of blowdown effluents and boiler water permitted** inside 12 nm. Continuous boiler feedwater treatment tank contents or diluted 7 percent hydrazine solution may be discharged outside 50 nm of shore. 7 percent hydrazine stock solution must be disposed of ashore.
	Boiler treatment chemicals	Anhydrous disodium phosphate, trisodium phosphate dodecahydrate, trisodium EDTA, 7 percent hydrazine, caustic soda	Containerize excess boiler water treatment chemicals for shore disposal. 7 percent hydrazine stock solution must be disposed of ashore.

* Contact local public works center/public works department for authorized procedures.

** Except when a State has a no-discharge zone applicable to this discharge.

Shipboard Hazardous Material Type	Examples of Generation Sources	Examples of Associated Hazardous Materials	Authorized Disposal Methods
Boiler wastewater (continued)	Boiler water/feedwater test chemicals.	Nitric acid, ethylenediamine-tetraacetic acid (EDTA), mercuric nitrate, potassium chloride, phenolphthalein, methyl purple, chloride indicator, hydrazine ampoules, caustic soda, oxygen ampoules, molybdate reagents, hardness indicator, hardness buffer, dimethylglyoxime.	Containerize excess reagents (including oxygen and hydrazine ampoules) and samples containing mercuric contaminated wastewater for shore disposal. If available, process mercuric samples through ion exchange cartridge. Overboard discharge of cartridge effluent permitted. Containerized exhausted cartridges for shore disposal. Boiler water/feedwater samples, except samples containing mercuric compounds, discharge overboard permitted outside 12 nm of shore
	Boiler waterside cleaning solutions.	Ethylenediaminetetraacetic acid (EDTA), citric acid and sulfamic acid.	Overboard discharge permitted beyond 50 nm of shore. In port, offload to tank, barge, or truck.* Offloading to bilge and shore bilgewater collection system is not permitted.
	Boiler layup solutions	Hydrazine/morpholine, sodium nitrate	Overboard discharge permitted beyond 50 nm of shore. In port, offload to tank, barge, or truck. Offloading to bilge and shore bilgewater collection system is not permitted.* For hydrazine/morpholine layup, boiler light-off with subsequent steaming direct from layup permitted. Refer to NSTM chapter 220, Volume 2, Boiler Water/ Feedwater Test and Treatment for details.
	Acid cleaning solutions.	Hydrochloric, sulfamic, and citric acids.	Overboard discharge not permitted. In port, offload to tank, barge, or truck. Offloading to bilge and shore bilgewater collection system is not permitted. *

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Shipboard Hazardous Material Type	Examples of Generation Sources	Examples of Associated Hazardous Materials	Authorized Disposal Methods
Boiler wastewater (continued)	Passivator solutions.	Sodium nitrate.	Overboard discharge not permitted. In port, offload to tank, barge or truck. Offloading to bilge and shore bilgewater collection system is not permitted.*
	Boilout and degreasing solutions.	Trisodium phosphate, sodium metasilicate, nonionic wetting agent, degreaser.	In port, offload to tank, barge, or truck. Offloading to bilge and shore bilgewater collection system is not permitted.*
	Waterjet wastewater	Sodium nitrate	Overboard discharge permitted outside 50 nm of shore. In port, offload to tank, barge or truck. Offloading to bilge and shore bilgewater collection system is not permitted.*
	Feedwater and mercuric sample demineralizer resins	Ion exchange resin with absorbed metal ions (including mercury).	Containerize for shore disposal as used hazardous material.
Canisters			
Battery water purification Canister	Cation exchanger, mixed bed exchanger.	Ion exchange resin with adsorbed metal ions.	Containerize for shore disposal.
Used/expired OBA canisters	Damage control operations	Potassium superoxide, sodium chlorate.	Label and containerize for shore disposal. Contact with oil, grease, or water during storage is prohibited. Follow guidelines within NSTM chapter 077, Personal Protective Equipment.
Chemical Light Sticks	Underway replenishment operations	Tert-Butyl Alcohol, Dimethylphthalate, Dibutyl Phthalate, Hydrogen Peroxide	Containerize for shore disposal.

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Shipboard Hazardous Material Type	Examples of Generation Sources	Examples of Associated Hazardous Materials	Authorized Disposal Methods
Distilling plant cleaning wastes	Off-line distilling plant chemical cleaning.	Citric acid, sulfamic acid, disodium EDTA, tetrasodium EDTA, trisodium phosphate.	In port, offload to tank, truck, or barge. Offloading to bilge and shore bilgewater collection system is not permitted.*
	On-line distilling plant chemical cleaning.	Citric acid, sulfamic acid, disodium EDTA, tetrasodium EDTA, trisodium phosphate.	Overboard discharge permitted beyond 50 nm of shore. In port, offload to tank, truck, or barge. Offloading to bilge and shore bilgewater collection system is not permitted.*
Film processing wastes	Color film	Continuous processor effluent, small quantities of processing liquids.	Hydroquinone, sodium thiosulfate
		Excess film, batch quantities of developer, fixer and intensifier solutions.	Hydroquinone, sodium thiosulfate, cellulose acetate.
	Black & white film	Continuous processor effluent, stop bath, photo-flo, detergents and hardener solutions.	Acetic and sulfuric acids, potassium chrome alum.
		Excess film, batch quantities of developer and intensifier solution.	Hydroquinone, ethanolamine, diethylene glycol, cellulose acetate.
	Fixer solutions	Sodium thiosulfate, silver, halides	Containerize for shore disposal.
			Overboard discharge permitted beyond 12 nm of shore. In port and within 12 nm, containerize for shore disposal. Do not discharge to CHT tank.
			Containerize for shore disposal
			Overboard discharge permitted beyond 12 nm of shore. Within 12 nm and in port, containerize for shore disposal if facilities are available. Do not discharge to CHT tank.
			Containerize for shore disposal. If available process fixer through silver recovery unit. Overboard discharge of unit effluent permitted beyond 12 nm of shore. In port, containerize effluent for shore disposal.

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Shipboard Hazardous Material Type	Examples of Generation Sources	Examples of Associated Hazardous Materials	Authorized Disposal Methods
Film processing wastes (continued) Black & white film (continued)	Fixer solutions (continued)	Sodium thiosulfate, silver, halides	For submarines: Containerize fixer solutions for shore disposal at all times.
Emergency Escape Breathing Devices (EEBDs)	Emergency Escape Operations	Sodium Chlorate, barium peroxide, iron, lithium hydroxide, potassium perchlorate	Label and containerize for shore disposal. Contact with oil, grease, or water during storage is prohibited. Follow guidelines within NSTM, chapter 077, Personal Protective Equipment.
Firefighting materials	Firefighting, testing of fire-fighting equipment.	AFFF (perfluorocarbon compounds mixed with polyoxyethylene compound).	Overboard discharge permitted beyond 12 nm of shore, preferably while ship is underway. In port and within 3 nm of shore, discharge to tank, barge or truck.* Between 3 to 12 nm overboard discharge permitted with minimum 12-knot speed.
Fluorescent light bulbs, other light bulbs containing mercury	Normal shipboard operation.	Mercury.	Retain for shore disposal.
Greases	Machine maintenance, motors, roller bearings.	Greases and antisieze compounds such as: MIL-G-18458; MIL-G-21164; MIL-G-24139; MIL-L-15719; DOD-G-24508	Containerize for shore disposal.
Hazardous material contaminated items Contaminated sorbents, rags, unrecoverable personal protective clothing	Normal ship maintenance operations, spill response operations.	Items contaminated with hazardous materials that must be containerized for shore disposal (find specific contaminants in this appendix to learn if containerization is required)	Containerize for shore disposal.

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Shipboard Hazardous Material Type	Examples of Generation Sources	Examples of Associated Hazardous Materials	Authorized Disposal Methods
Hazardous material contaminated items (continued)			
Contaminated sorbents, rags, personal protective clothing (continued)	Normal ship maintenance operations, spill response operations.	Items contaminated with hazardous materials that may be discharged overboard (find specific contaminants in this appendix to learn if overboard discharge is permitted).	Jettison beyond 25 nm or specified disposal distance in this table, whichever is greater. Discharged material must be negatively buoyant. Containerize for shore disposal if within 25 nm or disposal restriction distance of land.
Empty hazardous material containers	Cleaning operations.	Containers with residual hazardous material.	Follow guidance set forth in OPNAV P-45-114-95, CNO Policy Guide for Shipboard Hazardous Material Container Disposal.
Hydraulic fluids			
Petroleum-based hydraulic Fluids	Machinery, heavy lift elevators, trucks.	Fluids in accordance with MIL-H-17672, MIL-L-17331, MIL-F-17111, MIL-H-5606	Hold for shore disposal. Keep separate from synthetic hydraulic fluids.
Synthetic hydraulic fluids	Aircraft elevators, weapons handling systems, some ballast valve operating systems and replenishment-at-sea systems.	Fluids in accordance with MIL-H-19457 contain tertiary butylated triphenyl phosphate.	Hold for shore disposal. Keep separate from petroleum hydraulic fluids.
	Catapult retracting engines, jet blast deflectors, weapons elevators.	Fluids in accordance with MIL-H-22072 contain 30-60 percent ethylene glycol, 10-30 percent polyoxypolypropylene glycol, and 30-60 percent water	Hold for shore disposal. Keep separate from petroleum hydraulic fluids.
	Weapon and combat systems.	Synthetic fluids such as MIL-S-81087 and MIL-H-83282	Hold for shore disposal. Keep separate from petroleum hydraulic fluids.
Insecticides, pesticides	Pest control operations.	Diazinon, Baygon, Dyrethrin, Resmethrin, Dursban, Malathion.	Containerize for shore disposal.
Lubricants, dry-film	Machine maintenance, motors, roller bearings	Dry lube, molybdenum disulfide, graphite, talc	Containerize for shore disposal.

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Shipboard Hazardous Material Type	Examples of Generation Sources	Examples of Associated Hazardous Materials	Authorized Disposal Methods
Medical/dental lab chemicals and materials	Dental amalgam used as filling material, thermometers, mercury from broken thermometers	Silver, silver nitrate, mercuric nitrate, mercury	Containerize for shore disposal.
	Antiseptics, disinfectants	Isopropyl alcohol	Overboard discharge permitted beyond 12 nm of shore. In port, containerize for shore disposal.
X-Ray film processing wastes	X-Ray film processing	X-ray film processing chemicals	Containerize for shore disposal.
Oils			
Waste oils	Non-PBC containing capacitors, coils	Mineral, silicone, paraffin-based oils	Containerize for shore disposal
	Cutting fluids	Chlorinated and sulferized minerals oils, MIL-C-47220	Containerize for shore disposal
	Damping fluids	Silicone-based oils, dimethylpoly-siloxane	Containerize for shore disposal
	Lubricating oils from machinery, turbines, engines, and motors	Lubricating oils such as MIL-L-9000, MIL-L-15019, MIL-L-17331, and MIL-L-23699	Containerize for shore disposal
Oily sludge	Residue from oil/water separators, fuel tanks, degreasing operations	Oil mixed with lead, zinc, chromium, copper, tin residues	Containerize for shore disposal
Oily solid waste	Contaminated sorbents/rags, oil and fuel filters.	Items contaminated with residual oil	Containerize for shore disposal.
Paint wastes from painting, resurfacing operations	Paints, enamels, varnishes, lacquers, paint chips and debris.	Unusable paint. Paint contaminated solvents, strippers, application and clean-up materials.	Containerize for shore disposal.
Personal Items			
Disposable butane lighter	Lighters no longer usable.	Butane, plastics	Containerize for shore disposal.

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Shipboard Hazardous Material Type	Examples of Generation Sources	Examples of Associated Hazardous Materials	Authorized Disposal Methods
Polychlorinated biphenyl (PCB) contaminated components	Capacitors, coils (usually with radar systems) (a listing of components containing PCBs has been provided to each ship), electrical cables, felt gaskets.	PCBs	Containerize for shore disposal.
Propellants	Torpedo overhaul.	OTTO Fuel II, substituted hydrazine.	Containerize for shore disposal.
Solvents			
Chlorinated solvents	Cleaning operations.	Perchloroethylene, trichloroethylene, trichloromethane, trichloroethane, freon™.	Containerize for shore disposal. Keep separate from chlorinated solvents.
Non-chlorinated solvents	Cleaning operations.	Ethyl acetate, acetone, morpholine, methyl ethyl ketone, toluene, xylene, kerosene, petroleum naptha, petroleum ether, petroleum distillates. Ethylene and propylene glycols. Methyl, ethyl, isopropyl and butyl alcohols.	Containerize for shore disposal. Keep separate from chlorinated solvents. Overboard discharge permitted beyond 12 nm of shore. In port, containerize for offload.
Vitreous fibers, materials containing man-made fibers	Thermal insulation, pipe lagging.	Man-made vitreous fibers (MMVF).	Dispose in accordance with requirements set forth in OPNAVINST 5100.19C chapter B1
Water, waste			
Water with corrosion Inhibitors	Diesel generator cooling water, diesel engine cooling water, electronic cooling water, closed loop cooling water, locked-in ballast, fuel ballast.	MIL-A-46153, Paxcool, Catcool (ethylene glycol based antifreezes). MIL-A-53009 (sodium metaborate, potassium silicate, mercaptobenzothiazole)	Overboard discharge permitted beyond 12 nm of shore. In port and within 12 nm, containerize for shore disposal. Containerize excess stock chemicals for shore disposal Overboard discharge permitted beyond 12 nm of shore. In port and within 12 nm, containerize for shore disposal. Containerize excess stock chemicals for shore disposal

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Shipboard Hazardous Material Type	Examples of Generation Sources	Examples of Associated Hazardous Materials	Authorized Disposal Methods
Water, waste (continued)			
Water with corrosion Inhibitors (continued)	Diesel generator cooling water, diesel engine cooling water, electronic cooling water, closed loop cooling water, locked-in ballast, fuel ballast. (continued)	Nalcool 2000, Nalfleet 9-111	Overboard discharge permitted beyond 12 nm of shore. In port and within 12 nm, containerize for shore disposal. Containerize excess stock chemicals for shore disposal
		Soluble Oil	Overboard discharge permitted beyond 12 nm of shore. In port and within 12 nm, containerize for shore disposal. Containerize excess stock chemicals for shore disposal
	Residue from diesel engine coolant testing	Chloride test residues; copper sulfate mixed with MIL-A-46153 antifreeze or MIL-A-53009 or Nalcool 2000 or a combination treatment	Overboard discharge permitted beyond 12 nm of shore. In port and within 12 nm, containerize for shore disposal. Containerize excess stock chemicals for shore disposal
		Sodium chromate solution mixed with residual fuel or soluble oil.	Overboard discharge permitted beyond 50 nm of shore. Within 50 nm, containerize for shore disposal. Containerize excess stock chemicals for shore disposal.
	Detergent flush of engine cooling systems	MIL-D-16791 detergent	Overboard discharge permitted beyond 12 nm of shore. In port and within 12 nm, containerize for shore disposal. Containerize excess stock chemicals for shore disposal
	Acid cleaning of engine cooling systems	Diammonium citrate, DETU, MIL-D-16791 detergent	Beyond 12 nm of shore, overboard discharge permitted after neutralizing with sodium bicarbonate. In port and within 12 nm, containerize for shore disposal. Containerize excess stock chemicals for shore disposal

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Shipboard Hazardous Material Type	Examples of Generation Sources	Examples of Associated Hazardous Materials	Authorized Disposal Methods
Water, waste (continued)			
Water with corrosion Inhibitors (continued)	Acid cleaning of IF diesel engine cooler cores	Sulfamic acid, MIL-D-16791 detergent	Beyond 12 nm of shore, overboard discharge permitted after neutralizing with sodium bicarbonate. In port and within 12 nm, containerize for shore disposal. Containerize excess stock chemicals for shore disposal
Aircraft engine washdown wastewater	Water solutions with detergents, solvents, marine salts, and engine corrosion products.	Glycols, triethanolamine, naptha, 2-butoxyethanol, cadmium, chromium.	Overboard discharge permitted beyond 12 nm of shore. Inside 12 nm and in port, collect and containerize for shore disposal.

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